

**REMARKS**

The Applicant thanks the Examiner for the thorough consideration given the present application. Claims 1 and 4-9 are currently being prosecuted. Claims 1 and 5-9 are amended. Claim 1 is independent. The Examiner is respectfully requested to reconsider the rejections in view of the Amendments and Remarks as set forth hereinbelow.

**Reasons for Entry of Amendments**

At the outset, it is respectfully requested that this Amendment be entered into the Official File in view of the fact that the amendments to the claims automatically place the application in condition for allowance.

In the alternative, if the Examiner does not agree that this application is in condition for allowance, it is respectfully requested that this Amendment be entered for the purpose of appeal. This Amendment was not presented at an earlier date in view of the fact that Applicant did not fully appreciate the Examiner's position until the Final Office Action was reviewed.

**Drawings**

It is gratefully appreciated that the Examiner has accepted the drawings.

**Rejection Under 35 USC 103(a)**

Claims 1 and 3-9 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Roth et al. (U.S. 4,965,864) in view of Wright (U.S. 4,864,849) and Ohki et al. (U.S. 5,302,872). This rejection is respectfully traversed.

**Amendments to Independent Claim 1**

While not conceding the appropriateness of the Examiner's rejection, but merely to advance prosecution of the present application, independent claim 1 has been amended herein to recite a combination of elements directed to an electromagnetic pump, including *inter alia*

“wherein a magnetic circuit, through which magnetic flux generated from the moving member (10) passes, is constituted by said yokes (26a, 26b) and said outer yoke (52), and

a position of said moving member (10) is detected by detecting an increase of the magnetic flux interlinking with said air-core detecting coil (53).”

**Features of Independent Claim 1**

In the present application, the magnetic circuit, through which magnetic flux generated from the moving member (10) passes, is constituted by the yokes (26a, 26b) and the outer yoke (52), and the position of the moving member (10) is detected by detecting increase of magnetic flux interlinking with the air-core detecting coil (53), so that the detection accuracy of the air-core detecting coil (53), which detects the moving member (10), can be improved. These unique features of the present application are not disclosed and suggested in the cited references.

And, by coaxially arranging the air-core detecting coil (53) with the air-core electromagnetic coils (50a, 50b), induced voltage caused by changing the direction of the electric current passing through the air-core electromagnetic coils (50, 50b) can be offset.

Further, the induced voltage caused by the motion of the moving member (10) is increased by the magnetic circuit, which is constituted by the yokes (26a, 26b) and the outer yoke (52). Therefore, the detection accuracy can be improved, and influence of the induced voltage caused by changing the direction of the electric current can be reduced.

**Regarding Roth et al. (U.S. 4,965,864)**

The Roth et al. reference (US 4,965,864) discloses a linear motor. A piston is provided in a cylinder and reciprocally moved by applying electric current to coils, which are provided outside of the cylinder and equally spaced. The piston is linearly reciprocally moved by applying electric current to the coils, and the movement of the piston is controlled by selecting pulse voltage applied to a drive coil 1. A control circuit of the Roth et al. reference includes a sensor 13, e.g., piston position sensor, thermostat, pressure gauge, remote control unit, timer. In the Roth et al. reference, the moving member (piston) is reciprocally moved, so no air-core detecting coil is required. Therefore, no yokes for improving accuracy of detecting induced voltage detected by the detecting coil are required. Further, a member 17 of the Roth et al. reference is composed of fibers of glass, Kelvar®, or other appropriate material, so it does not relate to the yokes of the present application, which improve detection accuracy of the air-core detecting coil.

**Regarding Wright (U.S. 4,864,849)**

The Wright reference (US 4,864,849) discloses a viscometer which determines viscosity of a fluid by measuring a time for one reciprocating motion of a piston 1. By

measuring the time for one reciprocating motion instead of a one-way motion, the accuracy of the viscometer can be improved. Namely, the piston is reciprocally moved by supplying electricity to drive coils, but no air-core coils are used. Therefore, the Wright reference cannot be combined with the Roth et al. reference.

**Regarding Ohki et al. (U.S. 5,302,872)**

The Ohki et al. reference (US 5,302,872) discloses a drive unit of a linear motor and merely suggests to use air-coils as drive coils.

At least for the reasons explained above, the Applicant respectfully submits that the combination of elements as set forth in independent claim 1 is not disclosed or made obvious by the prior art of record, including Roth et al. (U.S. 4,965,864) in view of Wright (U.S. 4,864,849) and Ohki et al. (U.S. 5,302,872).

Therefore, independent claim 1 is in condition for allowance.

**Dependent Claims**

The Examiner will note that dependent claims 5-9 have been amended merely to place them in better form.

All dependent claims are in condition for allowance due to their dependency from allowable independent claims, or due to the additional novel features set forth therein.

All pending claims are now in condition for allowance.

*Application No. 10/566,470*  
*Amendment dated January 14, 2009*  
*Reply to Office Action of October 30, 2008*

*Docket No.: 0038-0487PUS1*  
*Art Unit: 3746*  
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Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. §103(a) are respectfully requested.

**CONCLUSION**

In view of the above remarks, it is believed that the claims clearly distinguish over the patents relied on by the Examiner, either alone or in combination.

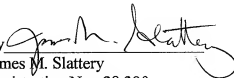
All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, he is invited to telephone Carl T. Thomsen (Reg. No. 50,786) at (703) 208-4030(direct line).

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.147; particularly, extension of time fees.

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Respectfully submitted,

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